Atmos. Chem. Phys. Discuss.,
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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Assessing uncertainties of a geophysical approach to estimate surface fine particulate matter distributions from satellite observed aerosol optical depth" *by* Xiaomeng Jin et al.

Anonymous Referee #1

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This study evaluates the uncertainties associated with geophysical approaches to derive surface PM2.5, based on satellite AOD and modeled PM2.5/AOD. The authors go through a very detailed evaluation of all the potential factors, using ground-based observations of PM2.5, AOD, aircraft observations of aerosol extinctions/composition, and atmospheric soundings of RH over the Northeast United States. The analysis is very comprehensive, the paper is well written and I commend the authors for presenting the results in a succinct way on the figures.

One suggestion that I have for the authors is to present a figure with timeseries of

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Discussion paper

the daily variations in PM2.5, AOD, and PM2.5/AOD. The manuscript only contains barplots of the biases and pearson correlation coefficients, and there would be value for the reader to see the actual timeseries. I found Figure 1 very interesting in terms of displaying the contributions of different factors to spatial variability in satellite-derived PM2.5. Something similar to illustrate the controlling factors for the daily variability would be valuable.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-962, 2018.